

PATENT ABSTRACTS OF JAPAN

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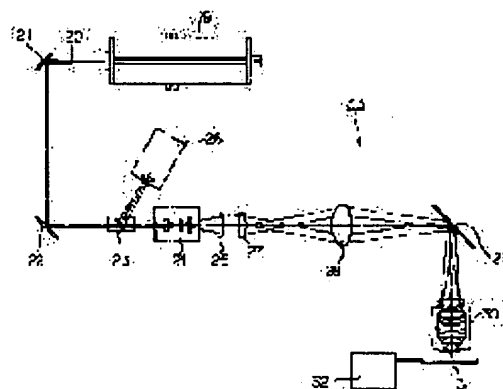
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(57)Abstract:

PURPOSE: To minimize the spot size of a laser beam, enhance the focus depth, and project a sample having a deep groove structure with a good resolution to make the dimensional measurement possible.

CONSTITUTION: A laser beam 20 is straightly advanced in a beam splitter 23 and emitted to an axicon prism 27. The spot size of the beam 20 is reduced to about $2\mu\text{m}$ by the prism 27, and narrowed to an extremely small spot size by a relay lens 28. The beam 20 is reflected 29, emitted to an objective lens 30, narrowed to about $0.2\mu\text{m}$ thereby, and focused on a sample surface in a scanner 31. When the dimension of the groove part of the sample is inspected, the focus position of the beam 20 is fixed according to the groove bottom part, and the sample is moved by a scan controller 32 to make the beam 20 scan within a prescribed observing area. The laser beam intensity entered to a photomultiplier 26 is different between the times when the beam passes the groove bottom part and the sample surface. Thus, the illuminance according to the output of the photomultiplier 26 is successively drawn, and much image information for the groove inner part is projected to a television monitor to automatically measure the pattern width of the groove.



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